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ABSTRACT

The purpose of this research was to determine whether student achievement in reading and spelling could be improved by using a typewriting instructional technique rather than a handwriting technique. The subjects were 23 second, third, and fourth grade students who scored significantly below the norms on segments of the Illinois Test of Psycholinguistic Abilities. These experimental subjects were required to type selected words daily, while a match-paired control group practiced the same words by handwriting. After 14 days of instruction, both groups took the California Achievement Tests, providing scores for reading comprehension, reading vocabulary, and spelling. The results indicated that the students improved significantly more in all three areas when they were given the experience of typing rather than handwriting the words. Neither the main effect due to grade level nor the interaction between grade level and achievement was significant. It was suggested that structured learning through aids such as the typewriter provided some remedial children with a useful orientation to the task. (Author/RL)

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Using the Typewriter to Improve Reading and Spelling

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Using the Typewriter to Improve Spelling and Reading

According to Cruickshank and Johnson (7), conventional instructional methods do not seem to facilitate the learning of some children who are low achievers, are perceptually disabled, or have other learning disabilities. Studies such as those by Hildreth (9), Coleman (6), Boyd and Talbert (3), Chapman (5), Tarnopol and Tarnopol (12), and Bartholome (1) have indicated that reading and spelling abilities of these children can be improved if appropriate developmental programs are implemented.

One method that has been used to teach students to spell and, as a by-product, to develop students' reading vocabularies and reading comprehension abilities is to require students to write spelling words. However, Spache (10, 11) reported that correlations between spelling achievement and the writing of spelling words were relatively weak. On the other hand, when students type words, their attention is directed from left to right rotation of letters (3); and the typing of words may prove to be a useful adjunct in learning to read and to compose (2, 4, 8).

The primary purpose of this study was to determine whether the use of the typewriter significantly improves the reading vocabulary, reading comprehension, and spelling achievement of children who score significantly below the norms on segments of the Illinois Test of Psycholinguistic Abilities.

Method

Subjects

Second, third, and fourth grade students at an elementary school in Richmond County, Georgia, were administered the Illinois Test of Psycholinguistic Abilities (ITPA). If a student's chronological age exceeded his or

her ITPA visual memory score by at least two years, and if the chronological age exceeded the ITPA visual closure score by at least one year, then that student was selected for the study. The ITPA was used as a basis for selection, since it can help to identify low achievers and children who are perceptually disabled. The specific cutoff scores for the visual memory and visual closure portions of the ITPA were established because they were significantly below the norm, yet they still yielded an adequate sample size. A total of 46 students met the ITPA criteria and thus comprised the sample. Each of the 46 students was black and 24 of the students were males. The grade level distribution included 16 second grade students, 14 third grade students, and 16 fourth grade students.

The Peabody Picture Vocabulary Test was used as a measure of the IQ scores of the students. The IQ scores ranged from 57 to 112 with a mean of 81 and a standard deviation of 13. Within each of the three grade levels, students were match-paired so that the difference between IQ scores for each pair never exceeded 6 points. Then, within each grade level, one student from each pair was randomly assigned to a group in which students were required to type words; and the other student was assigned to a group in which students were required to write words. The mean IQ score for the 23 students in the typing groups was 81.6, and the mean IQ score for the 23 students in the handwriting groups was 80.3.

Procedure

Guidelines in (13) were used to select appropriate spelling words for the students in each of the three grade levels. Students in the typing groups were required to type the spelling words. These students used the "hunt and peck" procedure to type the words. They were not allowed to use

pencils for these activities. Standard (non-electric) typewriters were used. Instructions for using the typewriters were minimal. Students in the handwriting groups were required to participate in exactly the same activities except that they used pencils and wrote the spelling words. In an attempt to balance the novelty effects of using the typewriter, the students in the handwriting groups were allowed to use the typewriters for 10 to 15 minutes each day during which they were given lists of random numbers and letters to type.

Each practice session required the students to type (write) each spelling word five times and then to type (write) short sentences that contained the spelling words. The teacher dictated the words and sentences to the pupils. The same teacher taught all the typing groups and all the handwriting groups during the practice sessions.

The practice sessions each lasted for approximately 40 minutes. The experimental period consisted of 14 consecutive school days during which each group was involved in 20 practice sessions. Each group had one session for each of the first eight of the 14 days and two sessions for each of the last six of the 14 days. Each group was given a total of 80 spelling words. For each grade level, the words given to the typing group were the same as the words given to the handwriting group.

On the day after the 14 day experimental period was completed, the typing and handwriting groups were administered the spelling, reading vocabulary, and reading comprehension portions of the California Achievement Test.

Results

A 3 (second grade versus third grade versus fourth grade) x 2 (typing versus handwriting) unweighted-means analysis of variance was performed on student achievement scores in spelling as determined by the California Achievement Test (CAT). Similar analyses were performed on the student CAT achievement scores in reading comprehension and in reading vocabulary development. The unweighted-means analyses were performed since the cell frequencies were not equal (14). The mean achievement scores as well as the mean grade level equivalence scores for the experimental conditions are presented in Table 1. The mean grade equivalence scores of the typing groups exceeded the mean grade equivalence scores of the handwriting groups by from .15 to .99 points. Table 2 indicates that neither the main effect due to grade level nor the interaction between the teaching method and grade level was significant. The instructional method main effect with reading vocabulary as the dependent variable was significant, F (1, 40) = 10.641, $p < .01$, as was the instructional method main effect with reading comprehension as the dependent variable, F (1, 40) = 9.521, $p < .01$. The instructional method main effect with spelling as the dependent variable was also significant, F (1, 40) = 6.611, $p < .05$.

Insert Tables 1 and 2 about here

Discussion

The findings of this study support the contentions of those who maintain that developmental programs other than those involving conventional instructional methods may improve the reading and spelling abilities of certain remedial children. In particular, the use of typewriting seemed to form the basis of a beneficial structural program. It may be that many of these students were slow in their perceptual development and the use of typewriters may have allowed the students to learn reading and spelling skills with less dependence on perceptual development. It should be noted that the practice sessions focused solely on typing (writing) words and sentences and did not relate directly to the development of reading skills per se. Thus, it may be that a key to effectiveness of such a program is the manner in which the program is structured rather than the specific content dealt with in the program.

The students for this study were all black. Similar studies should be conducted with larger cross sections of student populations. Also, research should be conducted to determine the optimum time, mental age, or chronological age that the typewriter should be used to teach spelling and reading. Finally, the present study focused on short-term effects of the use of the typewriter. Further studies should investigate the long-term development of reading and spelling skills.

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Table 1. - Group Mean CAT Scores for

Reading Vocabulary, Reading Comprehension, Spelling

		Grade 2	Grade 3	Grade 4
Typing		n = 8	n = 7	n = 8
	Reading Vocabulary			
	Mean Score	6.875	8.857	8.250
	Mean Grade Level Equivalence	2.24	2.70	2.58
	Reading Comprehension			
	Mean Score	13.375	15.428	13.375
	Mean Grade Level Equivalence	2.23	2.49	2.31
	Spelling			
	Mean Score	13.125	12.857	12.250
	Mean Grade Level Equivalence	2.69	2.70	2.43
Handwriting		n = 8	n = 7	n = 8
	Reading Vocabulary			
	Mean Score	5.125	7.000	4.875
	Mean Grade Level Equivalence	1.90	2.29	1.81
	Reading Comprehension			
	Mean Score	9.375	12.142	9.250
	Mean Grade Level Equivalence	1.70	2.07	1.73
	Spelling			
	Mean Score	9.870	12.142	12.000
	Mean Grade Level Equivalence	1.70	2.34	2.28

Table 2. - Results of the Analysis

Dependent Variable	Source of Variation	SS	df	MS	F
Reading Vocabulary	Instructional Method (A)	61.986	1	61.986	10.641**
	Grade Level (B)	30.016	2	15.008	2.576
	A x B	6.310	2	3.155	<1
	Within Cell	233.000	40	5.825	
Reading Comprehension	Instructional Method (A)	165.586	1	165.586	9.521**
	Grade Level (B)	60.666	2	30.333	1.744
	A x B	1.556	2	.778	<1
	Within Cell	695.698	40	17.392	
Spelling	Instructional Method (A)	22.645	1	22.645	6.614*
	Grade Level (B)	7.828	2	3.914	1.143
	A x B	19.960	2	9.980	2.915
	Within Cell	136.966	40	3.424	

** $p < .01$

* $p < .05$